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ABSTRACT

A study was conducted to determine the effectiveness of a Stress Management Seminar and a Test-Taking Skills Workshop in improving the scores of pre-nursing and guidance examinees at Wallace Community College in Dothan, Alabama. The 73 subjects took the Pre-Nursing and Guidance Examination (PNGE) in June 1984, September 1984, or January 1985. Forty subjects attended both the seminar and the workshop, while the remainder attended only the workshop. Skills addressed during the workshop included methods of answering multiple-choice questions using qualifiers, general study tips involving mnemonics, and time management techniques. Techniques presented during the seminar included deep breathing, cognitive restructuring, muscle relaxation, cue-controlled relaxation, and visual imagery. Data were collected via the Test Anxiety Scale, the Cognitive Interference Questionnaire, and scores on the PNGE, which is a norm-referenced test developed by the National League for Nursing. Results indicate that the treatments provided in the workshop and seminar for the time period allotted were not significant in reducing test anxiety. A 49-item bibliography is included. (TJH)

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THE EFFECTIVENESS OF STRESS MANAGEMENT AND TEST-TAKING WORKSHOPS IN REDUCING TEST ANXIETY OF COMMUNITY COLLEGE STUDENTS

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TM 011 195

The Effectiveness of Stress Management and Test-Taking Workshops in Reducing Test Anxiety Scores of Community College Students

Ways to reduce test anxiety in individuals include instructing them in techniques which increase test-wiseness or test-taking skills. Several studies indicated that increased academic performance may occur in persons taught test-taking skills (Ferrell, 1977; Kirkland and Hollandsworth, 1979; Parrish, 1982).

Some authors believe that test anxiety is merely due to the individual's poor study skills (Bruch, 1981; Tobias, 1984). In an attempt to increase student's abilities and lessen test-anxiety scores, several programs have been presented which included ways to improve the students' study skills (Bander, Russel and Zamostry, 1982; Bruch, Juster and Kaflowitz, 1983; Curtin and Hecklinger, 1981; Allen, G. J., 1971).

Researchers have presented various techniques to reduce test anxiety in subjects. Teaching test-wiseness or test-taking skills and teaching study skills to subjects are two techniques. Other researchers presented stress management programs which included several coping skills aimed at reducing test anxiety (Charlesworth, Murphy and Bentler, 1981; Williams, Decker and Libassi, 1983). Included in the stress management training of some authors were techniques such as: (1) cognitive restructuring (Denny, 1980; Goldfried, 1977; Goldfried, Linehan and Smith, 1978; Prager-Decker, 1979; Sweeny and Horan 1982; Tobias, 1984), (2) breathing exercises (Barrios, Ginter, Scalise, McKnight and Miller, 1976; Cohen, 1980; Longo, 1984), (3) muscle relaxation (Bennett, Hall and Guay, 1980; Borkovec, Grayson and Cooper, 1978; Goldfried and Trier, 1974; Sequin, 1984), and (4) systematic

desensitization (Deffenbacher, Mathis and Michaels, 1979; Deffenbacher and Michaels, 1980; Greenberg, 1983; Wolpe, 1969).

Other coping skills used by a number of authors, either individually or in combinations, in a stress management program included: (1) cue-controlled relaxation (Barrios, et al., 1976; McGlynn, Kinjo and Doherty, 1978; Russel and Lent, 1982; Sweeny and Horan, 1982), (2) visual imagery (Cohen, 1980; Sequin, 1984), (3) implosion (Smith and Nye, 1973), (4) hypnosis (Gibson, 1977; Wolberg, 1982), (5) biofeedback (Greenberg, 1983; Miller, Murphy and Miller, 1978), (6) meditation (Benson, 1975; Throll, 1982), and (7) autogenic training (Greenberg, 1983; Snider and Oetting, 1966).

Studies which have reported successful techniques to reduce test anxiety have been found in abundance in the literature. Regardless of the test-anxiety reduction technique utilized, Tyron (1980) stated: "that almost all treatments seem to be effective in reducing self-reported test anxiety; even a credible placebo pseudotherapy reduces test anxiety" (p. 364).

In an attempt to lessen student's test anxiety, schools have presented a variety of student aids. These include study skills workshops, pamphlets on test-taking skills, single treatment programs and stress management training programs. The studies illustrating such aids are seen in the work by Charlesworth, et al. (1981) and Bateman (1977).

Charlesworth et al. (1981) studied the effects of a five-week stress management program for nursing students. There were significant reductions in test anxiety scores for the participants as compared to scores of

non-partipants. Bateman (1977) published a self-paced program in booklet form for individuals preparing to take the Pre-Nursing and Guidance Examination. The booklet was incorporated into the total counseling program.

Over the past few years at Wallace Community College located in Dothan, Alabama, individuals registering to take the Pre-Nursing and Guidance Examination (PNGE) (National League for Nursing, 1984) a nusing program prerequisite, have complained of suffering from test anxiety. After completing the examination many individuals have expressed to the Nursing Department chairperson, the faculty and counselors their feelings of inadequacy and helplessness experienced while taking the PNGE. They have also requested that some type of presentation of coping skills and test-taking skills be given to those anticipating taking the PNGE to prepare them for the examination. It was suggested that if the examinees could control their anxiety, then they could remember material previously learned and would, hence, score higher on the PNGE.

Prior to the time of the present study, Wallace Community College preregistered prospective PNGE examinees, gave them a brochure about the PNGE and informed them of the time, place and cost of the examination. No other test-taking assistance was available to them.

Individuals taking the PNGE at Wallace Community College, are primarily white females ranging in age from eighteen to fifty. Over the past few years more and more women over the age of twenty-five have taken the PNGE. Many of these individuals having been removed from the school environment for several years need to review basic study and testing skills. These individuals need to re-establish their study and testing techniques not only for taking the PNGE, but also for their required classes.

In each testing session of the PNGE a high percentage of individuals score less than the minimum requirements set by Wallace College. In January 1984, fifty-four percent of the examinees failed to meet both minimum requirements for admission. In March 1984, fifty-five percent failed to meet the requirements while in June 1984, that percent was sixty-three. The failure rate may have been due, in part, to the individual's lack of knowledge but it may also have been due to the debilitating effects of test anxiety. Whenever applicants fail to meet PNGE score criteria for admission to the nursing program, they must wait another three months to retake the PNGE. This extension of academic time is expensive and discouraging to the individual and a factor in student attrition.

With the concepts of stress, anxiety and test anxiety in mind and in an attempt to meet the needs of those taking the PNGE, the author, with the permission of the Academic Dean and Chairman of the Nursing Department, organized and presented a no-charge Test-Taking Skills Worksop and a Stress Management Seminar. This program was held for all interested persons one week preceding the PNGE.

The Research Problem

The purpose of this study was to determine if there was a significant difference in the test scores of the two groups of Pre-Nursing and Guidance examinees: (1) Subjects who attended both the Test-Taking Skills Workshop and the Stress Management Seminar, and (2) Subjects who attended only the Test-Taking Skills Workshop. The study also measured whether reducing a student's test anxiety would increase his/her scores on the three sections of the PNGE.

Method

Reseach Design

This study was performed using a modified experimental research method, Campbell and Stanley's (1966) Post-Test Only Control Group Design. Volunteer subjects were randomly assigned to either the experimental group or the control group. The dependent variables were TAS scores, CIQ scores and PNGE scores (three sections: Verbal Ability, Science and Mathematics).

Statement of the Null Hypothesis

The null hypothesis for the study was as follows: (1) There was no significant ($p < .05$) difference between groups in performance levels on any of the dependent variables measured.

Subjects

The subjects were students or prospective students who, anticipating admissions into the Nursing Program at Wallace Community College, took the PNGE (a pre-admissions requirement) in June 1984, September 1984, or January 1985. There were 73 subjects who participated in the study. Forty attended both the Test-Taking Skills Workshop and the Stress Management Seminar while 33 attended only the Test-Taking Skills Workshop.

Treatment

One week prior to the PNGE, the subjects attended: (1) a no-charge Test-Taking Skills Workshop and a Stress Management Seminar, or (2) a Test-Taking Skills Workshop. Both the Test-Taking Skills Workshop and

the Stress Management Seminar were conducted by the researcher in order to ensure equitability among groups. Another instructor assisted the research in the final portion of the Test-Taking Skills Workshop which involved disseminating information about the Nursing Program at Wallace College.

Those who attended were randomly assigned to either the Treatment Group or the Control Group. Subjects in the Treatment Group (Group One) attended both a Stress Management Seminar and the Test-Taking Skills Workshop. Subjects in the Control Group (Group Two) attended only the Test-Taking Skills Workshop. Since both groups received the Test-Taking Skills Workshop this fulfilled the need, as stated by Tyron (1980), for an adequate control group--a factor lacking in many studies regarding test anxiety reduction. The subjects were not informed that there were two different groups. They were told that they would be separated for a period of similar small group activities.

The Test-Taking Skills Workshop was designed to address general study techniques and test-taking techniques. These techniques included methods to answer multiple choice questions using qualifiers, general study tips involving memory devices and time management during an examination. The Workshop included a section on techniques for taking a mathematics test including metrics, decimals, percentage problems, ratio and proportion, simple geometry and word problems.

All the subjects in Groups One and Two of the study attended the 2½ hour Test-Taking Skills Workshop. Following a short break, the participants were told that the investigator and a nursing instructor would work with them in two separate groups.

The Control Group watched a twenty-minute film previously prepared by the investigator and the Nursing Director. In the film the investigator interviewed the Nursing Director regarding the Nursing Program at Wallace Community College. At the conclusion of the film, the nursing instructor answered the participants' questions relating to the Nursing Program; reminded the participants about the time of the PNGE and dismissed them.

After the short break, the experimental group attended a Stress Management Seminar presented by the investigator. (The fact that this was the Experimental Group was not announced to the participants) they were told that the remainder of the workshop would be completed in small groups for more efficient time utilization. Subjects were instructed to listen attentively and practice at the designated time. They were also told to practice the demonstrated techniques all the week preceding the PNGE. They were told that the techniques presented to them would (if utilized) help them cope during stressful situations, for example, while taking an examination such as the PNGE.

The techniques presented in the one-hour Stress Management Seminar were given in the following order:

(1) Deep Breathing Technique (Cohen, 1980)

(2) Cognitive Restructuring Technique (Goldfried, et al. 1978)

(3) Muscle Relaxation (Benson, 1975)

(4) Cue-Controlled Relaxation (Cohen, 1980)

(5) Visual Imagery (Cohen, 1980)

Following the presentation of each technique, the participants practiced for a short time and asked pertinent questions relating to the

technique. At the conclusion of the last technique, the subjects viewed the videotape previously explained. The nursing instructor answered the participants' questions about the Nursing Program, restated the time for the PNGE and then dismissed the group.

Instrumentation

The two test-anxiety instruments utilized in the present study were Sarason's (1972) Test Anxiety Scale (TAS) and Sarason and Stoop's (1978) Cognitive Interference Questionnaire (CIQ) . Sarason (1972) developed the TAS through a series of revisions of the Test Anxiety Questionnaire (TAQ), an instrument developed by Mandler and S. Sarason in 1952. The TAS, as reported by Sarason (1978), has a test-retest reliability coefficient of more than .80. For the present study, the standardized alpha coefficient for reliability was calculated as .85. In the present study a score of 20 or more was used to indicate high levels of test anxiety and a score of 9 or below represented low levels of test anxiety which represented Sarason's (1972) original scoring method.

Employment of the CIQ has increased in test anxiety research (Kirkland and Hollandsworth, 1980; Paulman, 1982). According to Paulman (1982) the CIQ can be used "to differentiate cognitive processes of subgroups of test-anxious persons in evaluative settings" (pp. 1, 9). Publications citing the CIQ have not stated specific statistical data; however, a standardized alpha coefficient of .84 was calculated using data of the present study.

The subject's verbal ability and science and mathematics abilities were indicated through the Verbal Ability Section, Science Section and Mathematics Section of the Pre-Nursing and Guidance Examination (PNGE) developed by the National League for Nursing (NLN) (1984). Each section was designated to last sixty minutes.

The PNGE is a norm-referenced test. The subject's scores are reported in raw form and percentile form for each section. A composite score for all three sections is also reported. The NLN sends the results to the individual and to the institution selected by the individual. The NLN indicates that the scores on the PNGE are to be used by individual nursing schools as a pre-admission requirement and as a test to help admissions officials predict the subject's success in nursing school. The NLN does not recomment any set scores for admission but leaves that to the discretion of each institution. The minimal scores for acceptance at Wallace Community College are the fortieth percentile on each section and the fiftieth percentile on the composite.

Information reported by the National League for Nursing (NLN) 1983, to the Nursing Department of George C. Wallace Community College in Dothan, Alabama, regarding percentile scores of subjects taking the PNGE during part of 1980 and 1981 is given in Table 1.

Table I

Statistical information regarding the PNGE (1983) KR-20 coefficients of reliability are as follows: Verbal Ability Section .90, Mathematics Section .88, Science Section .83 and the composite of all three .94 (Breyer, 1985).

Administration of Instruments

On the day of the PNGE the participants were instructed to come into an adjacent room to score the TAS and CIQ after completing the PNGE. They were asked to take the TAS followed by the CIQ. They were asked to read the brief instructions on the board about how to complete the instruments. They were asked to write their answers on the answer sheet provided by the investigator. There was no time limit set for completing the instruments.

Light refreshments were served to the participants upon completion of the TAS and CIQ. The participants were thanked for completing the forms.

Data Analysis

The scores for the TAS, CIQ and PNGE were entered into the IBM 3033 computer at Auburn University, Alabama. The Statistical Package for the Social Science (SPSS) by Nie, Hull, Jenkins, Steinbrenner and Brent (1975)

was used in obtaining descriptive data. By using the available program breakdown in SPSS, the means and standard deviations were calculated for the data. Biomedical Computer Programs (BMDP) Dixon and Brown (1979) were utilized for the Hotelling's T^2 analysis of the data which statistically compares all variables simultaneously. The level of significance was set at .05.

Results

The results of the statistical analyses of data are given in tables 2 - 7.

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Table II

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Table 2 contains the number in each group, the mean, mode, standard deviation, median, variance, minimum score, maximum score and range on the TAS for Groups One and Two. The minimum score possible for the TAS is zero indicating a low-test anxiety state and the maximum score possiblee is 37 indicating a high-test anxiety state.

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Table III

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Table 3 contains the mean, mode, median, standard deviation, variance, minimum score, maximum score and range of scores on the CIQ for Groups One and Two. The maximum score possible on the CIQ is 12 indicating little interference and; hence, low-test anxiety. The maximum score possible is 62 indicating considerable interference and; hence, high-test anxiety.

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Table IV

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Table 4 contains the mean, mode, medians, standard deviation, variance, minimum score, maximum score and range of scores for the Verbal Ability Section of the PNGE for both groups.

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Table V

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Information regarding the Mathematics scores on the PNGE for both groups is stated in Table 5. The mean, mode, median, standard deviation, variance, minimum score, maximum score and range of scores is indicated in Table 5 for both groups.

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Table VI

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Table 6 contains information regarding the Science scores on the PNGE. For both groups the following information is given: mean, mode, median, standard deviation, variance, minimum score, maximum score and the range of scores.

The data were analyzed using an IBM 3033 main frame computer and the Statistical Package for the Social Sciences (SPSS) programs for the descriptive data (Nie, et al., 1975; Hull and Nie, 1981). Hotelling's T^2 analysis of the data was obtained through the use of Biomedical Computer Programs (BMDP) (Dixon and Brown, 1979). The level of significance was set at .05.

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Table VII

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The statistical analyses of the data collected in this study indicated that no significant differences existed between scores on the TAS, CIQ and PNGE of the subjects in Groups One and Two; therefore, the null hypothesis was not rejected.

Summary and Recommendations

The results of the statistical analyses of the data indicated that the treatments of Test-Taking Skills Workshop and Stress Management Seminar for the time period allotted were not significant in reducing test anxiety; therefore, the null hypothesis was not rejected.

Even though there was no statistical difference shown between the experimental and control groups, the research was beneficial in that it helped to reduce the lack of data regarding test anxiety reduction of subjects prior to their admission to a specific academic program. The study provides the basis for further research. Two recommendations for additional research include:

1. The study should be conducted with treatment given weekly over a period of four to five weeks. Rationale for this recommendation is based on a study by Charlesworth et al.

(1981) which utilized a stress management program as the treatment for nursing students. The study, conducted over a five-week period, contained two one-hour sessions of treatment each week. Results of the study showed a statistical difference in mean trait anxiety scores from pretest to final exams for the treatment group but not for the control.

2. The study should be conducted with a longer time interval between treatment and testing in order for the participants to have more time to practice the demonstrated techniques. Rationale for this recommendation is based on a study by Charlesworth, et al. (1981) who utilized a five-week period for their study in which subjects had time to practice a variety of stress management techniques between pretest and post-test administrations. The subjects in the Charlesworth et al. (1981) study were already in nursing school while those of the present study had not been accepted into the program at the time of treatment. It is possible that the subjects for this study had higher stress levels than those in the earlier study; however, the study was not designed to test this idea. A need for further research is indicated.

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Table 1

Reported Scores Equivalent to Specified Percentiles on Form 80A* and Form 80B** of the NLN Pre-Nursing and Guidance Examination by Normative Group**

	Form 80A Score			Form 80B Score		
	DI** (N=1028)	AD** (N=1015)	ALL** (N=2230)	DI** (N=906)	AD** (N=1292)	ALL** (N=2495)
Verbal Ability Test						
90th percentile	53	54	54	50	53	52
75th percentile	48	49	49	44	48	47
50th percentile	41	421	41	38	40	39
25th percentile	34	35	34	32	33	32
Mathematics Test						
90th percentile	34	31	33	31	30	31
75th percentile	29	27	29	26	25	26
50th percentile	23	21	22	22	20	21
25th percentile	18	16	17	17	15	16
Science Test						
90th percentile	41	41	41	37	39	39
75th percentile	36	35	36	32	33	33
50th percentile	31	30	31	27	28	28
25th percentile	26	25	26	23	23	23
Composite						
90th percentile	127	125	127	123	127	127
75th percentile	114	113	115	109	113	113
50th percentile	101	99	101	98	99	99
25th percentile	88	86	87	87	85	86

* Form 80A was administered March-August 1980; Form 80B was administered October 1980 - February 1981.

** DI - Applicants to diploma programs; AD - Applicants to associate degree programs; ALL - Applicants to basic nursing programs.

Table 2

Test Anxiety Scale

	Group 1 Experimental Group: Test-Taking Skills Workshop and Stress Management Seminar	Group 2 Control Group One: Test-Taking Skills Workshop Only
N =	40	33
Mean	20.00	20.15
Mode	22.00	15.00
Median	21.50	19.38
Standard Deviation	6.79	6.51
Variance	46.10	42.32
Minimum Score	6.00	8.00
Maximum Score	32.00	31.00
Range	26.00	23.00

Table 3

Cognitive Interference Scale

	Group 1 Experimental Group: Test-Taking Skills Workshop and Stress Management Seminar	Group 2 Control Group One: Test-Taking Skills Workshop Only
N =	40	33
Mean	33.25	33.00
Mode	41.00	33.00
Median	33.83	33.75
Standard Deviation	8.39	7.36
Variance	70.35	54.23
Minimum Score	17.00	18.00
Maximum Score	49.00	49.00
Range	32.00	31.00

Table 4

Verbal Ability Scores on the Pre-Nursing and Guidance Examination

	Group 1	Control 2
	Experimental Group: Test-Taking Skills Workshop and Stress Management Seminar	Control Group One: Test-Taking Skills Workshop Only
N =	40	33
Mean	39.13	42.97
Mode	27.00	27.00
Median	35.00	38.00
Standard Deviation	23.92	23.88
Variance	572.16	570.09
Minimum Score	3.00	8.00
Maximum Score	94.00	97.00
Range	91.00	89.00

Table 5

Mathematics Scores on the Pre-Nursing and Guidance Examination

	Group 1	Control 2
	Experimental Group: Test-Taking Skills Workshop and Stress Management Seminar	Control Group One: Test-TAking Skills Workshop Only
N =	40	33
Mean	37.28	50.82
Mode	40.00	40.00
Median	39.67	55.00
Standard Deviation	27.51	29.21
Variance	756.72	853.34
Minimum Score	0.00	1.00
Maximum Score	92.00	97.00
Range	82.00	96.00

Table 6

Science Scores on the Pre-Nursing and Guidance Examination

	Group 1	Group 2
	Experimental Group: Test-Taking Skills Workshop and Stress Management Seminar	Control Group One: Test-Taking Skills Workshop Only
N =	40	33
Mean	49.85	53.61
Mode	50.00	45.00
Median	50.33	54.25
Standard Deviation	23.14	21.90
Variance	535.66	479.68
Minimum Score	5.00	6.00
Maximum Score	95.00	97.00
Range	90.00	91.00

Table 7

Statistical Comparison of
Experimental and Control Groups

Hotelling's T^2	df	Approximate F
.05	2,70	0.03

Experimental Group: (Subjects attended the Test-Taking Skills Workshop and Stress Management Seminar)

Control Group: (Subjects attended the Test-Taking Skills Workshop only)